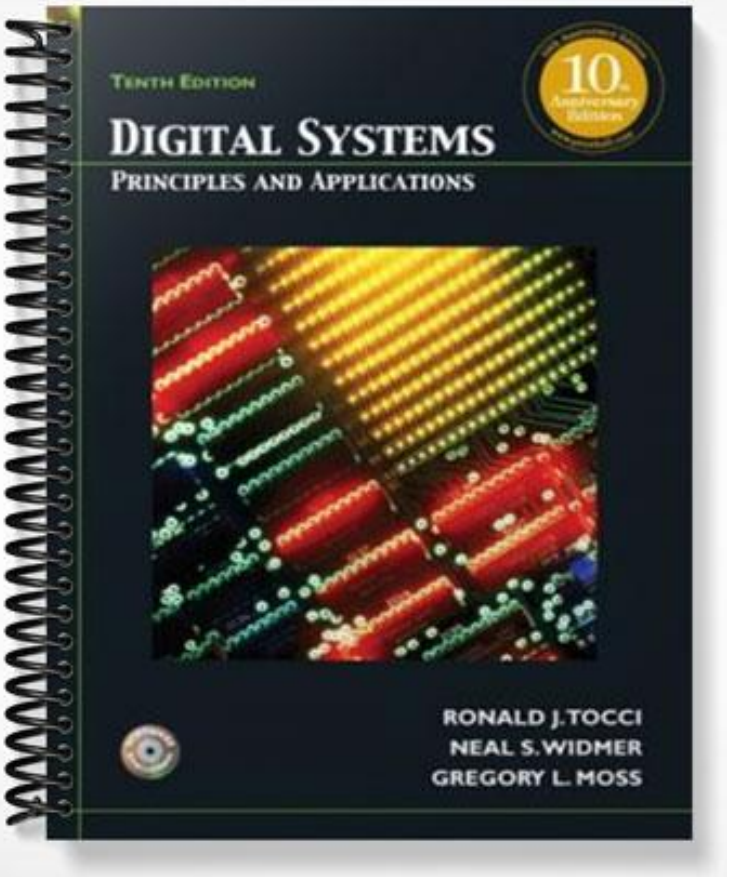
TEST BANK


TENTH EDITION
10th Anniversary Edition
DIGITAL SYSTEMS
PRINCIPLES AND APPLICATIONS
RONALD J. TOCCI
NEAL S. WIDMER
GREGORY L. MOSS

Test Item File
to accompany

DIGITAL SYSTEMS
Principle and Applications

Tenth Edition

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Chapter 1 Introductory Concepts

1) Digital representations of numerical quantities may **BEST** be described as having characteristics:

A) that vary in constant and direct proportion to the values they represent.

B) that vary constantly over a continuous range of values.

C) that are difficult to interpret because they are continuously changing.

D) that vary in discrete steps in proportion to the values they represent.

Answer: D

2) Which of the following is not an analog device?

A) thermocouple

B) a 10-turn potentiometer

C) light switch

D) audio microphone

Answer: C

3) Which of the following statements does **NOT** describe an advantage of digital technology?

A) Information storage is easy.

B) The operation can be programmed.

C) The circuits are less effected by noise.

D) The values may vary over a continuous range.

Answer: D

4) What is the binary number before 1011010_2 in the counting sequence?

A) 1011011_2

B) 1011000_2

C) 1011001_2

D) 1011100_2

Answer: C

5) How many binary bits are necessary to represent 748 different numbers?

A) 10

B) 9

C) 8

D) 7

Answer: A

6) Which of the following represents the largest number that can be obtained in the decimal system when the MSD positional value is 10^4 ?

A) 10,000

B) 9,999

C) 100,000

D) 99,999

Answer: D

7) The decimal number system is not used in digital systems because:

A) it is difficult to design electronic equipment that will recognize ten different voltage levels.

B) it would take a greater number of decimal digits than binary digits to express a given quantity.

C) the decimal digits to the left of the decimal point are normally raised to negative exponent values.

D) the binary system is **NOT** a weighted positional value system like the decimal system.

Answer: A

8) How many different numbers can be obtained using five binary bits?

A) 32

B) 31

C) 64

D) 63

Answer: A

9) What is the largest decimal number that can be represented using five binary bits?

A) 32

B) 31

C) 64

D) 63

Answer: B

10) What is the decimal equivalent of the binary number 1100011_2 ?

A) 29

B) 39

C) 49

D) 51

Answer: D

11) Which of the following decimal numbers is represented by the binary bits 1011_2 ?

A) 9

B) 11

C) 13

D) 15

Answer: B

12) What is the minimum number of binary bits required to represent a count of 175_{10} ?

A) 8

B) 7

C) 6

D) 5

Answer: A

13) What is the largest decimal value that can be represented using nine binary bits?

A) 1024

B) 1023

C) 512

D) 511

Answer: D

14) Having counted up to 1001101_2, what value comes next?

A) 1001110_2

B) 1010010_2

C) 1110010_2

D) 1100010_2

Answer: A

15) Which of the following describes digital memory?

A) Outputs remain in their new state after inputs are removed.

B) Outputs return to their original state after inputs are removed.

C) Inputs remain in their new state after outputs are removed.

D) Inputs return to their original state after outputs are changed.

Answer: A

16) Which of the following voltage ranges would most likely be used to represent a binary zero in a typical digital circuit?

A) 0 V - 0.8 V

B) 0 V - 2 V

C) 0.8 V - 4 V

D) 2 V - 5 V

Answer: A

17) Which of the following voltage ranges would most likely be used to represent a binary one?

A) 0 V - 0.8 V

B) 0.8 V - 2 V

C) 0 V - 4 V

D) 2 V - 5 V

Answer: D

18) A given digital circuit is referred to as a *logic circuit*. This label means that the circuit operates:

A) as an analog representation of a given quantity.

B) as a fully hybrid circuit.

C) by an unknown characteristic of a specific set of rules.

D) by a certain set of logic rules.

Answer: D

19) The parallel transmission of digital data:

A) requires only one signal line between sender and receiver.

B) requires as many signal lines between sender and receiver as there are data bits.

C) is much slower than the serial transmission of data.

D) is less expensive than the serial method of data transmission.

Answer: B

20) A set of instructions that tell a computer exactly what to do is called a:

A) program.

B) control unit.

C) memory unit.

D) arithmetic/logic unit.

Answer: A

21) Which of the following is **NOT** used to enter data into a computer through its input unit?

A) keyboard

B) magnetic disk

C) punched cards

D) printer/plotter

Answer: D

22) The name of the computer unit that sends appropriate signals to all the other units to cause a specific instruction to be executed is the:

A) output unit.

B) memory unit.

C) control unit.

D) arithmetic/logic unit.

Answer: C

23) The microprocessor's logic, memory, and input/output circuits are collectively referred to as:

A) semiconductor modules.

B) microprocessor packaging.

C) microprocessor architecture.

D) microprocessor power supply.

Answer: C

24) In addition to its microprocessor, a microcontroller must also have _____ circuits.

A) input ports

B) output ports

C) internal memory

D) all of the above

Answer: D

25) The purpose of the bus in microprocessor-based systems is to:

A) allow the industry to build standard products.

B) ensure that 12 MHz signals are transmitted.

C) provide standard mechanical connection.

D) allow the various parts of the system to communicate using well-defined signal paths.

Answer: D

26) The electronic device that converts digital data to an analog quantity is the:

A) ADC.

B) DAC.

C) CMOS.

D) TTL.

Answer: B

27) A device used to display one or more digital signals so that they can be compared to expected timing diagrams for the signals is a:

A) DMM.

B) logic analyzer.

C) low capacitance probe.

D) frequency counter.

Answer: B

28) The primary disadvantage to digital techniques is that the "real world" is primarily analog.

Answer: TRUE

29) Hybrid systems contain both digital and analog circuits.

Answer: TRUE

30) Two signal voltages having **slightly** different voltage levels cannot be at the same binary levels.

Answer: FALSE

31) The logic analysis of a digital circuit is used to determine how the circuit responds to a binary (0 or 1) input rather than an actual input voltage.

Answer: TRUE

32) Integrated circuits (ICs) are also referred to as discrete component circuits.

Answer: FALSE

33) Transistor-transistor logic (TTL) uses the bipolar transistor as its main circuit element.

Answer: TRUE

34) Circuits that exhibit the property of memory normally revert to their original state when the input is removed.

Answer: FALSE

35) If the LSB of a binary number is a one (1), it is an even number.

Answer: FALSE

36) It is difficult to store digital data.

Answer: FALSE

37) Greater accuracy and precision are possible with digital techniques.

Answer: TRUE

38) Digital circuits are more affected by noise than analog circuits.

Answer: FALSE

39) In a typical digital system, 4.5 V and 3.1 V represent different binary levels.

Answer: FALSE

40) Serial data transmission costs more to implement than parallel data transmission.

Answer: FALSE

41) Parallel data transmission is faster than serial data transmission.

Answer: TRUE

42) Minicomputers can handle more data than mainframes.

Answer: FALSE

43) A CD stores information in analog form.

Answer: FALSE

44) A(n) _____ quantity varies in proportion to a voltage or current.

Answer: analog

45) When digital and analog systems are combined the result is called a _____ system.

Answer: hybrid

46) The digit that changes most often when counting is called the _____.

Answer: LSB

47) In _____ data transmission, a single conductor is used.

Answer: serial

48) In _____ data transmission, multiple conductors are used.

Answer: parallel

49) A _____ diagram shows how logic signal level varies with respect to time.

Answer: timing

50) A set of instructions for a computer is called a _____.

Answer: program

51) A computer's _____ unit takes instructions from the memory unit and interprets them.

Answer: control

52) In a digital system, three or four numbering systems may be in use at the same time.

Answer: TRUE

53) A bit consists of 8 bytes.

Answer: FALSE

54) A parity bit is an extra bit that is attached to a code group that is being transferred from one location to another.

Answer: TRUE

55) The binary equivalent of 3710 is 111001111110.

Answer: TRUE

56) Numbers that are greater than 9 are represented by the letters G, H, I, J, K, and L in the hex system.

Answer: FALSE

57) The acronym ASCII stands for American Standard Code for Information _____.

Answer: Interchange

58) The three most commonly-used numbering systems in the digital system are _____, _____, and _____.

Answer: decimal, binary, hexadecimal

59) The _____ system is also called the base-10 system.

Answer: decimal

60) The binary equivalent of 37 is _____.

Answer: 100101

61) BCD stands for _____.

Answer: binary-coded-decimal

62) The most widely used scheme for data transmission error detection is called the _____ method.

Answer: parity

63) The decimal equivalent of $A3B_{16}$ is _____.

Answer: 2619

64) What is the primary numbering system in digital applications?

A) decimal

B) octal

C) binary

D) hexadecimal

Answer: C

65) Using a special group of symbols to represent numbers, letters, or words is called:

A) Alphanumeric Code.

B) American Standard Code for Information Interchange.

C) Straight Binary Code.

D) Encoding.

Answer: D

66) How many bits are required to code each digit using BCD numbering system?

A) 8

B) 4

C) 2

D) 6

Answer: B

67) What numbering system is used as a "shorthand" way of represent strings of bits?

A) Binary

B) Decimal

C) Hexadecimal

D) BCD

Answer: C

68) A computer must recognize codes that represent letters of the alphabet, punctuation marks, and other special characters as well as numbers. What is this code called?

A) Alphanumeric Code

B) American Standard Code for Information Interchange

C) Straight Binary Code

D) Encoding

Answer: A

69) Where is a parity bit usually placed in a string of bits?

A) in the middle of the group

B) to the left of the MSB

C) to the left of the LSB

D) to the right of the MSB

Answer: B

70) _____ occurs when the receiver examines the data that it has received from the transmitter.

A) Parity method

B) Electrical noise

C) Parity checking

D) Parity bit

Answer: C